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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/674,280	09/29/2003	Richard A. Schomburg	117163. 00091	3122

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EXAMINER

WILLIAMS JR, RONALD E

ART UNIT	PAPER NUMBER
2121	

DATE MAILED: 07/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/674,280	Applicant(s) SCHOMBURG, RICHARD A.	
	Examiner Ronald E. Williams	Art Unit 2121	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ____ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 April 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 April 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

1. This Office Action is responsive to application 10/674,280 filed on April 25, 2006.
2. Claims 1-15 have been examined.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-8 and 10-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Esteller et al. (**USPN: 6,594,524**) hereinafter referred to as Esteller.

Regarding Claim 1, Esteller discloses:

1. An apparatus for the classification of physiological events on the basis of physiological signals (**see Abstract, lines 4-10**), said apparatus comprising: a probabilistic neural network (**see Brief Description of Drawing Figure 32**) which is adapted to receive a set of values representing the physiological signal and which contains a number of event classes which represent physiological events and which are respectively determined by a number of comparative values (**see col 9, lines 48-52**), which network is adapted on the basis of the comparison of the set of values with the

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comparative values to implement an association of the physiological signal represented by the set of values with one of the event classes (***see col 36, lines 51-67 and also see col 37, lines 1-36***)

Regarding Claim 2, Esteller discloses:

2. The apparatus of claim 1, wherein: the updating unit is so designed that upon updating of the comparative values an average value is formed from a number of value sets which have previously resulted in an association of the physiological signals which they represent with the event class to be updated and wherein the updating operation is effected on the basis of the average value formed in that way. (***see col 21, Average Power or Moving Average Power***)

Regarding Claim 3, Esteller discloses:

3. The apparatus of claim 1 wherein: the updating unit is so designed that upon updating of the comparative values exponential weighting of a number of value sets which have previously resulted in an association of the physiological signals which they represent with the event class to be updated is effected and wherein the updating operation is effected on the basis of the exponentially weighted value sets. (***see col 23, Average Nonlinear Energy or Moving Average Nonlinear Energy, more specifically col 24, lines 3-26***)

Regarding Claim 4, Esteller discloses:

4. The apparatus of claim 3, wherein: the updating unit is so designed that updating of an event class is effected after the association of a n-th value set with said event class, wherein that defines a predetermined number of value sets. **(see col 24, Thresholded Nonlinear Energy, lines 27-47)**

Regarding Claim 5, Esteller discloses:

5. The apparatus of claim 4, wherein: different values for n are to be associated with different event classes. **(see col 31, Window Length Selection, lines 52-56)**

Regarding Claim 6, Esteller discloses:

6. The apparatus of claim 5, further comprising: a signal input for the input of a physiological signal; **(see Abstract, lines 4-10)** and a transformation unit **(see Figure 3, element 200)** which is connected to the signal input for receiving the physiological signal and which is adapted to implement a transformation of the physiological signal in such a way that as the output signal it outputs a number of values representing the physiological signal and based on the transformation operation; **(see col 18, lines 41-60 and also see col 20, lines 26-36)** wherein the probabilistic neural network is connected to the transformation unit for receiving the values as the value set. **(see Figure 1, element 200)**

Regarding Claim 7, Esteller discloses:

7. The apparatus of claim 6, wherein: the transformation unit is adapted for executing the transformation operation on the basis of wavelets and a transformation rule determining the values to be outputted using the wavelets. (*see col 28, lines 21-44*)

Regarding Claim 8, Esteller discloses:

8. An implantable medical device (*see col 3, lines 4-7*), comprising: an apparatus for the classification of physiological events on the basis of physiological signals (*see Abstract, lines 4-10*) comprising: a probabilistic neural network (*see Brief Description of Drawing Figure 32*) which is adapted to receive a set of values representing the physiological signal and which contains a number of event classes which represent physiological events and which are respectively determined by a number of comparative values (*see col 9, lines 48-52*), which network is adapted on the basis of the comparison of the set of values with the comparative values to implement an association of the physiological signal represented by the set of values with one of the event classes (*see col 36, lines 51-67 and also see col 37 lines 1-36*)

Regarding Claim 10, Esteller discloses:

10. The apparatus of claim 1, wherein: the updating unit is so designed that updating of an event class is effected after the association of a n-th value set with said event class, wherein that defines a predetermined number of value sets. (*see col 24, Thresholded*

Nonlinear Energy, lines 27-47)

Regarding Claim 11, Esteller discloses:

11. The apparatus of claim 2, wherein: the updating unit is so designed that updating of an event class is effected after the association of a n-th value set with said event class, wherein that defines a predetermined number of value sets. ***(see col 24, Duration of Thresholded Nonlinear Energy, lines 27-47)***

Regarding Claim 12, Esteller discloses:

12. The apparatus of claim 10, wherein: different values for n are to be associated with different event classes. ***(see col 31, Window Length Selection, lines 52-56)***

Regarding Claim 13, Esteller discloses:

13. The apparatus of claim 11, wherein: different values for n are to be associated with different event classes. ***(see col 31, Window Length Selection, lines 52-56)***

Regarding Claim 14, Esteller discloses:

14. The apparatus of claim 1, further comprising: a signal input for the input of a physiological signal ***(see Abstract, lines 4-10)***; and a transformation unit ***(see Figure 3, element 200)*** which is connected to the signal input for receiving the physiological signal and which is adapted to implement a transformation of the physiological signal in such a way that as the output signal it outputs a number of values representing the

physiological signal and based on the transformation operation (**see col 18, lines 41-60 and also see col 20, lines 26-36**); wherein the probabilistic neural network is connected to the transformation unit for receiving the values as the value set. (**see Figure 1, element 200**)

Regarding Claim 15, Esteller discloses:

15. The apparatus of claim 14, wherein: the transformation unit is adapted for executing the transformation operation on the basis of wavelets and a transformation rule determining the values to be outputted using the wavelets. (**see col 28, lines 21-44**)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Esteller (USPN: 6,594,524) in view of Mahmood et al. (**IEEE: Temporal Updating Scheme for Probabilistic Neural Network with Application to Satellite Cloud Classification, 2001**) hereinafter referred to as Mahmood.

Esteller discloses an invention similar to applicant's claimed invention except that Esteller fails to disclose an updating unit that is connected to and works with the probabilistic neural network.

Mahmood discloses an updating unit connected to the probabilistic neural network for updating the comparative values of an event class on the basis of the set of values of at least one physiological signal which has been associated with said event class in a preceding association operation. (**see Figure 1**)

It would be obvious to one of ordinary skill in the arts at the time of the invention to modify the invention of Esteller to include the updating unit taught by Mahmood to allow better classification performance.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Esteller et al. (USPN: 6,594,524) in view of Mahmood et al. (**IEEE: Temporal Updating Scheme for Probabilistic Neural Network with Application to Satellite Cloud Classification, 2001**) in further view of Gray et al. (USPN: 6,144,879) hereinafter referred to as Gray.

Gray discloses an implantable medical device wherein the medical device is in the form of a cardiac pacemaker or defibrillator. (**see Abstract, Figure 4 and Figure 8**)

It would be obvious to one of ordinary skill in the arts at the time of the invention to include the probabilistic neural network and wavelet transformation methodologies disclosed by Esteller in the cardiac pacemaker disclosed by Gray to allow more efficient classification of physiological events.

Response to Arguments

Applicant asserts that Esteller fails to teach an updating unit connected to the Probabilistic Neural Network. Examiner agrees that while Esteller discloses a low level and high level controller which are responsible for creating the feedback law and the knowledge base update law they are not the updating unit that is claimed by applicant. Examiner states that Mahmood discloses a Probabilistic Neural Network classifier connected to a Probabilistic Neural Network updating scheme which is the the updating unit claimed by applicant, thusly claims 1 and 8 stand rejected.

Applicant asserts that average power and moving average power are not used to update nodes of the Probabilistic Neural Network. Examiner asserts that applicant's argument is irrelevant because subject matter being argued is not present in claims: therefore, claims 2 and 3 stand rejected.

Applicant asserts that Esteller fails to disclose updating an event class after association of a n-th value set. Examiner disagrees and states that Esteller discloses a new sequence or feature that takes a value equal to the number of consecutive ones found in that stream of the TNE(n) sequence which is the updating an event class after

association of a n-th value set as claimed by applicant, thusly claims 4-5 and 10-13 stand rejected.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ronald E. Williams whose telephone number is 571 272 2590. The examiner can normally be reached on MWF 7-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anthony Knight can be reached on 571 272 3687. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


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